
Tobacco, Alcohol, and Illicit Drug Use: Racial and Ethnic Differences Among U.S. High School Seniors, 1976-2000

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S Y N O P S I S

Objective: This study examines differences in adolescents' use of tobacco, alcohol, and illicit drugs by racial and ethnic groups.

Method: The authors analyzed questionnaire data from large, nationally representative samples of U.S. high school seniors to examine differences in drug use prevalence and trends among racial and ethnic groups between 1976 and 2000.

Results: On average, American Indian seniors showed the highest levels of tobacco, alcohol, and illicit drug use. Cuban American and white seniors also tended to have relatively high levels of substance use, followed by Mexican American and Puerto Rican seniors. Other Latin American, African American, and Asian American seniors reported the lowest levels of drug use. Most of these differences are longstanding, but some have widened and others narrowed during the past 25 years.

Conclusions: Significant differences exist in adolescent use of tobacco, alcohol, and illicit drugs by racial and ethnic groups, and these differences have changed over time. Future research should examine these differences and seek to identify the sources and consequences of the disparities.

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INTRODUCTION

Nearly 14 million Americans use illicit drugs, 66 million use tobacco, and 104 million drink alcohol.¹ By the time U.S. students leave high school, 55% have used an illicit drug, 65% have tried cigarettes, and 80% have used alcohol.² The widespread use of tobacco, alcohol, and other drugs exacts a tremendous toll on the social and physical health of the nation. In fact, substance abuse has been identified as the number one preventable health problem in the United States, accounting for more deaths, illnesses, and disabilities than any other preventable condition and costing the nation more than \$400 billion per year.³

The use of tobacco, alcohol, and other drugs typically begins during adolescence.² For this reason, much research has focused on the epidemiology, etiology, and prevention of substance use by young people (ages 12-18). Historically, most of this research has focused on whites, who constitute the majority of young people. Over the past decade, however, the number of nonwhites has grown to almost one-third of the total 12-18 population, and in nearly one-half of the nation's largest cities, more than one-half of the young people are not white.⁴

In the coming decade, the white population of the United States is projected to grow just 3%. Over the same period, the Hispanic American population is expected to increase by 35% and the number of Asian Americans to grow by 36%. The numbers of African Americans and American Indians are projected to rise by 12%.⁵ Racial and ethnic minority groups in the United States are composed disproportionately of adolescents—the age group at greatest risk to begin using drugs. The rapid growth of these racial and ethnic populations, coupled with their relative youthfulness and socioeconomic disadvantages, makes substance use and abuse an issue that will have increasingly important implications, not only for the well-being of the racial and ethnic communities affected but for the nation as a whole.

The need for research on drug use among the nation's increasingly diverse population is particularly important because minority subgroups experience disproportionately many of the negative consequences of substance abuse, despite having drug use prevalence rates that in many instances are lower than those of white adolescents.^{2,6-11} In light of the direct and indirect relationship between substance abuse and the various drug-related consequences for which racial and ethnic differences are greatest (fetal alcohol syndrome, HIV/AIDS, various cancers, heart disease, cirrhosis,

violence, incarceration), substance use is an important, if not the single greatest, cause of health disparities among racial and ethnic subgroups.

Recognizing those disparities, the National Institutes of Health (NIH) has begun an Institute-wide initiative to reduce, and ultimately eliminate, health disparities across racial and ethnic subgroups. The NIH Health Disparities Initiative involves all of its Institutes, Centers, and Offices. As a part of the initiative, each of the NIH Institutes has drafted a strategic plan, consistent with its mission, to address racial and ethnic health disparities.

The Institutes that focus explicitly on substance abuse (National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism) support epidemiologic studies of racial and ethnic differences in the patterns and prevalence of substance use and its sequelae. Perhaps the key limitation of the epidemiologic studies of racial and ethnic differences in substance use that have been conducted is that the number of respondents included in most studies is too small to investigate within-group profiles.¹ In an effort to address this limitation and to further the goals of the NIH/NIDA Health Disparities Initiative, this study uses large, nationally representative samples of U.S. high school seniors to document differences in drug use across racial and ethnic subgroups. The study examines current patterns and recent trends in the prevalence of tobacco, alcohol, and illicit drug use by white, African American, Hispanic American, Asian American, and American Indian adolescents.

Prevalence data from an earlier study revealed that American Indian seniors had the highest levels of drug use, followed by white seniors. Hispanic American seniors used drugs at an intermediate level; African American and Asian American seniors used them at the lowest levels.⁶ Trend data from 1976 to 1989 were largely consistent with this pattern of differences.

This study expands on the previous analyses in two important ways. First, we further disaggregate the Hispanic American population from two categories (Mexican American and Puerto Rican/other Latin American) to four (Mexican American, Puerto Rican, Cuban American, and other Latin American). Second, we examine 11 additional years of trend data, updating the trends from 1989 to 2000.

This study achieves three objectives. First, it examines empirically the extent to which drug use varies across racial and ethnic subgroups. Second, it investigates the extent to which subgroup differences have changed over the past 25 years. Third, it examines the possible implications of the findings for drug-

related health disparities among racial and ethnic groups.

METHODS

Data Analyses. We present descriptive data on our samples and on the annual, 30-day, and daily prevalence of the drugs used most widely by young people in the United States. We then present data on differences in drug use by racial and ethnic subgroups for the 25-year period 1976-2000.

The University of Michigan's Monitoring the Future study, from which the data for this study were drawn, was designed to provide data that are representative of the nation as a whole, not to study racial and ethnic differences. It therefore included no oversampling of young people in any of the racial and ethnic subgroups. Several subgroups examined represent only a small proportion of the population.* To provide sufficient cases to examine the subgroups separately, we combine data from several years.

For the analysis of annual, 30-day, and daily drug use prevalence, we combine data from 1996 to 2000. The combined sample includes data from about 64,000 high school seniors. For the trend analyses, we combined the data into sets of five sets, each spanning a five-year interval: 1976-80, 1981-85, 1986-90, 1991-95, and 1996-2000 (table 1).

Sampling Design. The study used a three-stage sampling design to obtain nationally representative samples of high school seniors from the 48 contiguous states¹² (a detailed description of the design is available elsewhere²). First, specific geographic regions were selected. Next, schools were selected within each region. Finally, students were selected from within each school. This procedure yielded nationally representative samples of about 16,000 high school seniors per year since 1975. Sample weights were assigned to each student to take into account school sample sizes as well as variations in selection probabilities that occurred at earlier stages of the sampling process.

Students completed self-administered, machine-readable questionnaires during a normal class period. The questionnaire response rates averaged about 83%. Absence on the day of data collection was the primary reason why students were missed; it is estimated that

less than 1% of students refused to complete the questionnaire. Six different questionnaire forms (five before 1989) were used each year, each administered to a randomly selected sixth of the sample.

Drug use and racial and ethnic identification measures appeared on all forms. The alcohol and drug use measures were based on the following item: "On how many occasions (if any) have you used [name of the drug category] (a) In your lifetime? (b) During the last 12 months? (c) During the last 30 days?" The seven response categories include 1-2, 3-5, 6-9, 10-19, 20-39, and 40 or more occasions. Annual prevalence refers to use in the past 12 months; monthly prevalence refers to use in the past 30 days. Daily use refers to having used a drug on 20 or more occasions in the past 30 days. A heavy alcohol use measure asked students how often they had had five or more drinks in a row in the past two weeks. Cigarette use was measured by asking students about how much they had smoked in the past 30 days. The response categories were none, less than one cigarette per day, one to five cigarettes per day, half a pack per day, about one pack per day, about one and a half packs per day, and two or more packs per day. Past research suggests that these measures are both reliable and valid.^{13,14}

Race or ethnicity was measured by the following item: "How do you describe yourself?" The response categories for this measure were 1 = American Indian; 2 = black or African American; 3 = Mexican American or Chicano; 4 = Cuban American; 5 = Puerto Rican; 6 = Other Latin American; 7 = Oriental or Asian American; 8 = white or Caucasian; and 9 = Other. Each of these groups is of course, diverse; treating the groups as homogeneous may mask important differences within and between groups. Ideally, more refined measures would be used. Unfortunately, no such measures were available in the dataset.

RESULTS

Descriptive Data. Between 1976 and 2000, the population of U.S. high school seniors became increasingly diverse, with the proportion of nonwhite seniors nearly doubling, from 17% in 1976-80 to 30% by 1996-2000 (table 1). Data on annual (table 2), 30-day (table 3), and daily (table 4) drug use reveal marked differences across racial and ethnic subgroups.

* The number of Cuban American seniors, for example, is very small ($n = 218$). Because of their high level of clustering in certain regions of the country, the results pertaining to this group should be interpreted with caution.

Table 1. Racial/ethnic distribution of the Monitoring the Future combined samples^a

Ethnic group	12th Graders									
	1976-80		1981-85		1986-90		1991-95		1996-2000	
	N	%	N	%	N	%	N	%	N	%
White	61,219	82.6	61,939	79.2	57,337	76.4	51,913	72.4	45,349	70.2
African American	7,767	10.5	8,995	11.5	7,936	10.6	8,413	11.7	7,906	12.2
Mexican American	1,274	1.7	1,658	2.1	3,588	4.8	4,845	6.8	3,673	5.7
Cuban American	N/A	N/A	N/A	N/A	N/A	N/A	154	0.2	218	0.3
Puerto Rican	N/A	N/A	N/A	N/A	N/A	N/A	498	0.7	763	1.2
Other Latin American	730	1.0	1,264	1.6	1,445	1.9	965	1.3	1,286	2.0
Asian American	595	0.8	1,371	1.8	1,935	2.6	2,317	3.2	2,312	3.6
American Indian	722	1.0	1,007	1.3	1,085	1.4	586	0.8	547	0.8
Other	1,798	2.4	1,947	2.5	1,675	2.2	2,006	2.8	2,559	4.0
Total	74,105	100.0	78,181	100.0	75,001	100.0	71,697	100.0	64,613	100.0

Note: Sample sizes are based on the minimum sample sizes from table 2.

The multistage sampling design, with respondents clustered in schools, produces larger sampling errors than would a simple random sample of equivalent size. The estimated design effects are 11.0 for whites, 3.6 for African Americans, 2.7 for Mexican Americans, 2.0 for Cuban Americans, 2.2 for Puerto Ricans, 2.3 for Other Latin Americans, 2.5 for Asian Americans, and 2.1 for American Indians. Frequencies used to calculate statistical significance ($p < .01$) are equal to the number of cases shown in the table divided by the appropriate design effect.

^a See references 1 and 2

Source: The Monitoring the Future Study, The University of Michigan.

The statistical significance of the differences across groups is a function of sample size, proportion of the total population, and design effects (see note to table 1). Taking these factors into account, the largest 95% confidence intervals in tables 2-4 are 1.5% for whites, 2.2% for African Americans, 2.5% for Mexican Americans, 3.3% for Asian Americans, 4.1% for other Latin Americans, 4.9% for Puerto Ricans, 5.6% for American Indians, and 9.6% for Cuban Americans. In light of the large number of drugs and subgroups that we examine below, it would be unwieldy (and largely unnecessary, given the findings) to specify significance levels for each comparison. We therefore focus our discussion primarily on differences that exceed conventional standards for statistical significance ($p < .01$).

Marijuana. Approximately 37% of U.S. high school seniors reported having used marijuana during the preceding year (1996-2000 combined) (table 2). Considerable differences in prevalence exist across racial and ethnic subgroups. Annual prevalence was highest among American Indian seniors (45%); at intermediate levels among white, Mexican American, Cuban American, and Puerto Rican seniors; somewhat lower among other Latin and African American seniors; and lowest among Asian American seniors (22%). Thirty-day and daily marijuana use prevalence rates were

substantially lower than the annual rates, but the same general pattern emerged.

Cocaine. Approximately 5% of high school seniors reported using cocaine in the preceding year; 2% had used the drug in the past 30 days. Annual cocaine prevalence rates were highest among Mexican American, Cuban American, and American Indian seniors; somewhat lower among white seniors; even lower among Puerto Rican, other Latin American, and Asian American seniors; and lowest among African American seniors. Thirty-day cocaine use was highest among Cuban American and American Indian seniors, lower among white and Puerto Rican seniors, still lower among other Latin and Asian American seniors, and lowest among African American seniors.

Other illicit drugs. Use of illicit drugs other than marijuana and cocaine varied widely by drug. In general, other drugs were used most widely by Cuban American and American Indian seniors, followed by white, all other Latin American, African American, and Asian American seniors. Because of the relatively low prevalence of use of some of the illicit drugs, many of the subgroup differences are not statistically significant.

Alcohol. Alcohol is the drug used most widely by young people in the United States, across racial and ethnic groups. Approximately three-quarters of white,

Table 2. Annual prevalence of selected drugs, 1996-2000 data combined, by race

Type of drug	Percentage who used in last 12 months - 12th graders									
	Total	White	African American	Mexican American	Cuban American	Puerto Rican	Other Latin American	Asian American	American Indian	Other
Minimum N	64,613	45,349	7,906	3,673	218	763	1,286	2,312	547	2,559
Any illicit	41.0	42.8	32.6	44.5	45.1	42.0	34.7	24.5	51.9	41.2
Marijuana/hashish	36.9	38.6	30.1	40.4	36.2	37.6	29.7	21.7	45.3	36.4
Inhalants ^a	6.6	7.7	1.9	5.1	9.1	4.7	4.5	3.3	9.4	6.4
Hallucinogens	9.1	10.7	1.6	7.9	15.5	8.1	6.4	4.7	12.3	10.0
LSD	7.7	9.1	1.3	6.9	12.5	6.3	5.2	3.9	10.7	8.2
Cocaine	5.4	5.9	0.9	8.9	10.8	4.1	3.9	2.8	10.0	5.0
Crack	2.3	2.4	0.4	4.5	4.9	2.6	1.9	1.6	4.0	2.4
Heroin	1.1	1.2	0.4	1.3	5.4	1.9	0.3	0.5	1.3	1.6
Stimulants	10.0	11.7	2.7	8.4	11.0	6.2	6.5	5.4	18.4	10.6
Barbiturates	5.4	6.4	1.2	3.4	12.4	5.2	3.2	2.8	9.7	5.7
Tranquilizers	5.2	6.2	0.9	3.5	11.6	3.6	3.6	2.4	8.5	5.4
Alcohol	73.9	77.1	59.9	74.2	77.7	73.6	72.9	57.0	76.5	69.0

^aData are based on five of six forms from 1996 to 1998 and three of six forms from 1999 to 2000.

Source: The Monitoring the Future Study, The University of Michigan.

Mexican American, Cuban American, Puerto Rican, other Latin American, and American Indian seniors reported using alcohol during the preceding year (table 2); roughly one-half had done so in the past 30 days (table 3). More than one-half of African American and Asian American seniors had used alcohol during

the preceding year, and approximately one-third had done so in the past 30 days.

Daily alcohol use rates were relatively low among seniors, ranging from 6% for American Indians to 1% for Asian Americans. Nearly one-third of the seniors indicated that they had had five or more drinks in a row

Table 3. Thirty-day prevalence of selected drugs, 1996-2000 data combined, by race

Type of drug	Percentage who used in last 30 days - 12th graders									
	Total	White	African American	Mexican American	Cuban American	Puerto Rican	Other Latin American	Asian American	American Indian	Other
Minimum N	64,623	45,353	7,910	3,672	216	766	1,285	2,312	548	2,562
Any illicit	25.1	26.4	19.8	25.7	32.5	26.3	19.0	14.3	33.2	25.5
Marijuana/hashish	22.3	23.3	18.5	23.6	25.4	23.4	16.1	12.8	29.6	22.3
Inhalants ^a	2.4	2.7	1.1	1.8	6.6	2.7	1.7	1.0	4.3	2.3
Hallucinogens	3.3	3.9	0.8	3.2	7.7	3.7	1.7	1.5	4.6	4.1
LSD	2.5	2.9	0.6	2.2	6.4	2.7	1.4	1.2	3.2	3.0
Cocaine	2.2	2.4	0.6	3.8	5.7	2.7	1.3	1.3	4.2	2.5
Crack	1.0	0.9	0.3	2.2	2.5	2.2	0.6	0.7	2.1	1.5
Heroin	0.5	0.5	0.4	0.6	3.5	1.3	0.1	0.3	0.6	0.9
Stimulants	4.5	5.3	1.3	3.9	5.5	3.0	2.8	2.2	7.7	4.3
Barbiturates	2.4	2.9	0.7	1.5	6.1	1.8	0.9	1.1	4.1	2.5
Tranquilizers	2.2	2.6	0.4	1.3	8.2	1.7	1.5	1.2	3.2	2.4
Alcohol	51.5	56.1	32.5	50.7	56.8	44.8	47.5	32.4	55.1	45.4
Cigarettes	34.3	39.6	14.3	25.7	30.1	29.6	25.2	20.4	46.1	30.6

^aData are based on five of six forms from 1996 to 1998 and three of six forms from 1999 to 2000.

Source: The Monitoring the Future Study, The University of Michigan.

Table 4. Daily use of 3 types of drugs in the last 30 days, 1996-2000 data combined, by race

Type of drug	Percentage who used daily in last 30 days - 12th graders									
	Total	White	African American	Mexican American	Cuban American	Puerto Rican	Other Latin American	Asian American	American Indian	Other
Minimum N	65,101	45,744	7,931	3,602	215	813	1,349	2,302	555	2,589
Marijuana/hashish	5.4	5.7	4.3	6.2	7.2	5.6	2.9	1.7	9.6	5.9
Alcohol										
Daily	3.5	3.8	1.6	5.2	5.0	3.1	2.9	1.0	6.1	3.2
5+ drinks in a row/ past 2 weeks	30.8	35.1	12.4	31.3	30.0	21.9	25.8	15.3	37.0	25.1
Cigarettes	22.4	26.8	7.5	12.9	17.8	20.4	12.5	12.3	29.3	19.9
Half-pack or more per day	12.7	15.9	2.6	4.6	11.3	11.5	4.8	4.9	17.1	11.1

Source: The Monitoring the Future Study, The University of Michigan.

in a single sitting within the preceding two weeks (defined here as frequent heavy drinking). Frequent heavy drinking rates were highest among white and American Indian seniors, lower among Mexican American and Cuban American seniors, even lower among other Latin American and Puerto Rican seniors, and lowest among Asian American and African American seniors.

Cigarettes. One-third of high school seniors reported having smoked in the past 30 days, with the percentages varying from 46% among American Indian seniors to 14% among African American seniors. The differences for heavy smoking (at least half a pack per day) among racial and ethnic subgroups followed a similar pattern. Seniors were not asked about annual smoking of cigarettes.

Trends. Figure 1 presents trend data for selected drugs, 1976-2000. Because there were too few cases for separate analyses before 1991, data for Cuban American, Puerto Rican, and other Latin American seniors were combined into a single category, shown by a single trend line labeled "P/O" (Puerto Rican and other Latin American). In the 1991-2000 data, we were able to disaggregate these subgroups. For those years, we show separate trend lines for Cuban American, Puerto Rican, and other Latin American seniors. We examine the changes in drug use between 1976 and 2000, paying particular attention to the extent to which trends have or have not been similar over time across the various racial and ethnic subgroups.

Marijuana. Marijuana use declined sharply across all racial and ethnic subgroups between the late 1970s

and the early 1990s. After reaching a low point in 1992, marijuana use by all subgroups of high school seniors has since been increasing.² Despite these changes, large changes in the pattern of racial and ethnic differences have not taken place: use continues to be highest among American Indian seniors, at intermediate levels among white and many Hispanic and African American seniors, and lowest among Asian American seniors.

Cocaine. Cocaine use increased across all racial and ethnic subgroups from the mid-1970s to the early 1980s, declined until the early 1990s, and increased thereafter. Use appears to have been highest among Cuban American, Mexican American, and American Indian seniors. Although patterns of use varied over time, the relatively low prevalence levels and small sample sizes make it impossible to conclude that important changes in cocaine use across racial and ethnic groups have occurred.

Alcohol. Alcohol use declined among high school seniors during the 1980s and early 1990s; thereafter it showed little change.² The decline occurred across all racial and ethnic subgroups.

Cigarettes. Patterns of daily cigarette use were relatively flat for white seniors from the early 1980s until the middle 1990s. In contrast, use by African Americans continued to decline. Daily smoking rates among the total sample of high school seniors reached their lowest point in 1992 and then rose through 1997.² Cigarette smoking declined modestly for Cuban American and American Indian seniors and increased modestly in other groups. As a result, the gap between white and American Indian seniors narrowed.

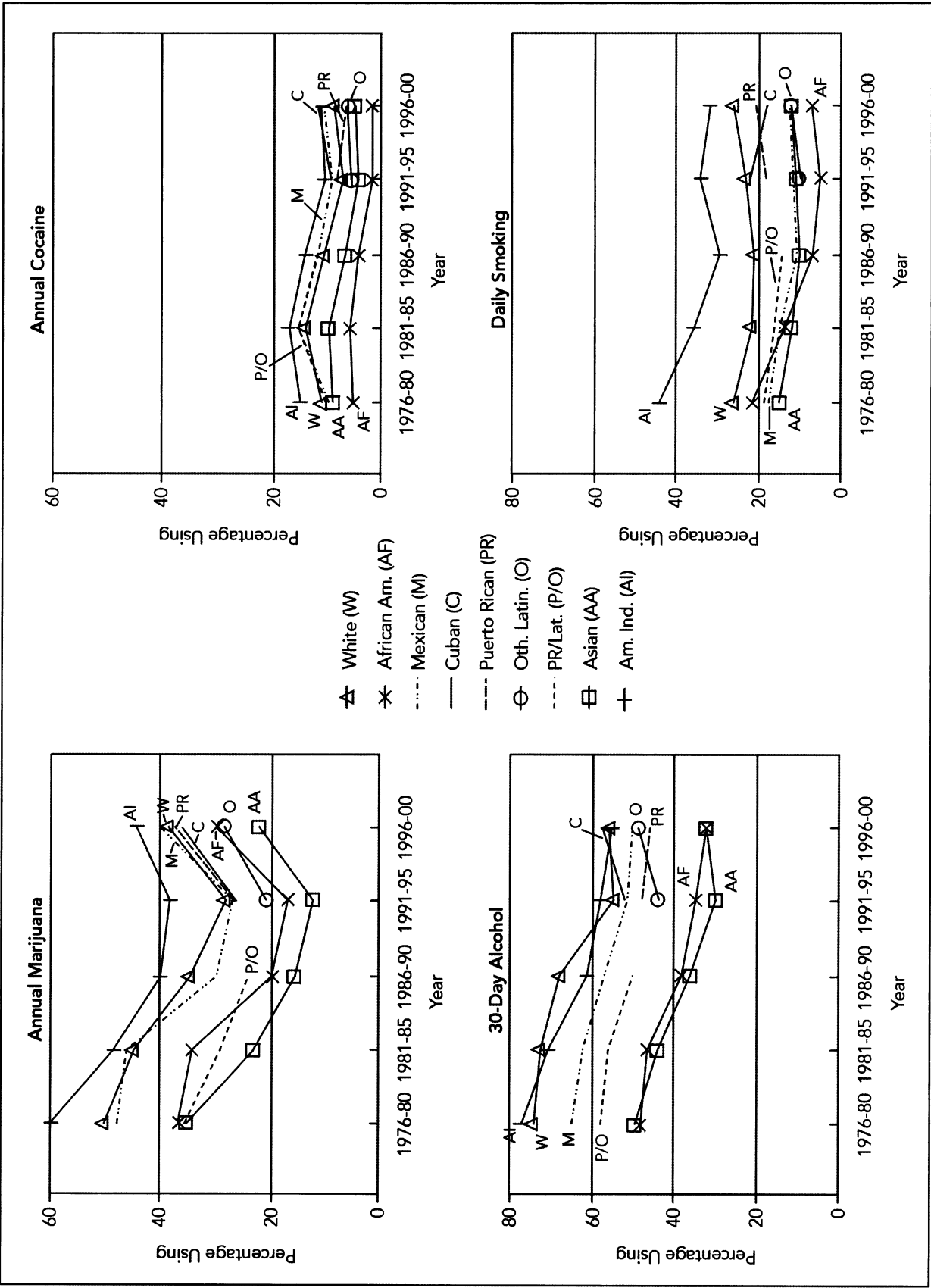


Figure 1. Substance use by race/ethnicity, 1976-2000

DISCUSSION

Our results reveal that, on average, use of tobacco, alcohol, and other drugs is not significantly higher among nonwhite seniors than it is among white seniors. People of color disproportionately experience the negative health consequences of substance abuse, however. Because substance use typically begins during adolescence, a growing body of research has begun to examine racial and ethnic differences in the epidemiology and etiology of substance use among young people. Limitations and weaknesses reduce the value of much of the research, however.^{6,14} For example, many studies investigate only one substance and draw from small, often nonrepresentative samples limited to specific communities, cities, or regions. Many studies have lacked sufficient numbers of cases to examine patterns of drug use among young people who were not members of the three largest racial and ethnic groups (whites, African Americans, and Hispanic Americans), let alone examine the heterogeneity that exists within the broad groupings of young people who may share a common language or culture. Yet another limitation is the paucity of research that examines the extent to which changes in drug use by white adolescents have also occurred among nonwhite young people.

Several concerns and limitations remain in this study. Although we were able to disaggregate the Hispanic American population into several subgroups, our data did not permit us to examine subgroups within the populations we refer to as white, African American, other Latin American, Asian American, or American Indian. There is a great deal of diversity within these groups. Larger studies, or studies of locations in which there are significant numbers of young people within specific subgroups, can address this important issue in the future.

One of the most serious concerns about studies like this one is that the findings are based on self-reported data about socially undesirable behavior. In recent years, empirical research has examined the validity of adolescents' self-reported drug use.^{6,15} These studies suggest that self-reported data are, on the whole, valid. Although some doubt remains over the validity of using self-reported data to identify differences in drug use across racial, ethnic, and cultural groups, empirical studies have shown that these data are, by and large, valid.^{14,16,17}

Another important limitation of this study relates to the representativeness of the samples. The data were drawn from students in schools. The results thus do not include drug use by students who are frequently

absent from school or who have dropped out of school. In the late 1990s, dropout rates were 7.3% for whites, 12.6% for African Americans, 4.3% for Asian/Pacific Islanders, and 28.6% for Hispanic Americans.¹⁸ Had high school dropouts been included, drug use prevalences would likely have been different from, and generally higher than, those reported here.

A recent study that investigated this "dropout hypothesis" found lifetime marijuana prevalence rates of 46% for white, 49% for Mexican American, and 46% for American Indian students.¹⁹ These rates are comparable to those found here. Drug use prevalences among dropouts was 80% for white, 81% for Mexican American, and 76% for American Indian dropouts. Because the proportions of Mexican American and American Indian dropouts were significantly higher than the proportion of whites who dropped out, omitting dropouts disproportionately reduced the prevalence of drug use among the Mexican American and American Indian populations. Corrected for the omission of dropouts, the lifetime drug use estimates for the total white sample increases by only 3.8%, but the prevalence rate for Mexican Americans rises 14.7% and the rate for American Indians jumps to 15.0%. These findings suggest that the relatively high levels of drug use by some of the racial and ethnic subgroups we examined would be even higher had we accounted for drug use by dropouts.

These findings suggest that disparities in drug-related health outcomes will continue to exist well into the future. The most encouraging trend is that African American adolescents are less likely than other groups to smoke cigarettes. This should eventually lead to some narrowing of disparities in tobacco-related health outcomes between African Americans and whites.

If the goal of reducing and ultimately eliminating racial and ethnic disparities in drug-related social and physical health outcomes is to be realized, research and intervention efforts must more aggressively try to understand why racial and ethnic differences in substance use exist; prevent drug use, particularly among certain racial and ethnic minority groups; reduce vulnerability to drug use, which seems higher for some groups; and continue to identify and eliminate factors that cause drug use and its negative consequences. A central goal of this study was to contribute to the epidemiologic foundation on which this important work can be built.

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